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About Lemon Eucalyptus Oils

Medically reviewed by Debra Rose Wilson, Ph.D., MSN, R.N., IBCLC, AHN-BC, CHT — Written by Jill Seladi-Schulman, Ph.D. on February 26, 2020

OLE vs. essential oil Uses Benefits Risks As a bug repellent Takeaway

Oil of lemon eucalyptus (OLE) is a product that comes from the lemon eucalyptus tree.

OLE is actually different from lemon eucalyptus essential oil. Read on as we discuss this difference, the uses and benefits of OLE, and more.

The many eucalyptus trees

The lemon eucalyptus tree (*Corymbia citriodora*) is native to Australia. You may also see it referred to as lemon-scented eucalyptus or lemon-scented gum. It gets its name from its leaves, which have a lemony scent.

There are many different types of eucalyptus tree. They're often used to produce essential oils.

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OLE vs. lemon eucalyptus essential oil

Despite having similar names, OLE is a different product than lemon eucalyptus essential oil.

Lemon eucalyptus is the essential oil that's distilled from the leaves of the lemon eucalyptus tree. It has many different chemical components, including the major component citronellal. This is also found in other essential oils like citronella.

OLE is an extract from the leaves of the lemon eucalyptus tree. It's enriched for an active ingredient called para-menthane-3,8-diol (PMD). PMD can also be chemically made in a laboratory.

Uses

OLE, which is an extract of the lemon eucalyptus tree, is predominantly used to repel pests. These can include mosquitoes, ticks, and other biting bugs.

Extracted OLE is refined to increase the content of PMD, its active ingredient. Commercially available OLE products often contain 30 percent OLE and 20 percent PMD.

Synthetic PMD is made in a laboratory. It's also used as a bug repellent

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Commercially available synthetic PMD products have a lower PMD concentration than commercial OLE products. Products with synthetic PMD have a PMD concentration of about 10 percent.

Lemon eucalyptus essential oil uses

Like OLE and PMD, lemon eucalyptus essential oil is also used as a bug repellent. You may also see people using it for things like:

- skin conditions, such as wounds and infections
- pain relief
- respiratory conditions, like colds and asthma

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Benefits

Research into OLE and PMD concern their use as a bug repellent. A 2016 review of older studies indicates that the active ingredient PMD may:

- have comparable activity and duration to DEET
- offer better protection against ticks than DEET, affecting tick

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- be effective against some types of biting midges

Let's look at a snapshot of what more recent research says:

- A 2018 study looked at the effect of 20 percent PMD on the feeding of *Aedes aegypti*, a mosquito that can transmit dengue fever. Exposure to PMD led to significantly less feeding compared with a control substance.
- A 2015 study compared the effectiveness of commercially available bug repellents for two species of mosquito. One of the products used was an OLE product called Cutter lemon eucalyptus.
- While DEET was the most effective repellent in the 2015 study, Cutter lemon eucalyptus had a similar efficacy. It had a strong, long lasting effect for one mosquito species and a less strong (but still significant) effect on the other.
- A 2009 study assessed PMD from OLE and its effect on immature ticks (nymphs). Nymphs can transmit diseases like Lyme disease. PMD was toxic to nymphs. The effect increased with the PMD concentration.

> **SUMMARY**
>
> OLE and its active ingredient PMD have repellent properties that may be comparable to DEET in some cases. PMD may also affect mosquito feeding behavior and have toxicity to ticks.

Lemon eucalyptus essential oil benefits

Many of the proposed benefits of lemon eucalyptus essential oil are based off anecdotal evidence. That means they're based off someone's personal experience rather than scientific research.

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essential oil. Here's what some of it says:

- A 2018 study compared properties of lemon eucalyptus essential oil with eight other eucalyptus species. They found that lemon eucalyptus oil had high antioxidant activity but lower antibacterial and anticancer activity.
- A 2014 study looked at the effect of lemon eucalyptus essential oil on three species of fungi. It was observed that lemon eucalyptus essential oil inhibited spore production and growth of all three species.
- A 2012 study investigated the antioxidant activity of lemon eucalyptus essential oil using a variety of tests. It was found that lemon eucalyptus oil as well as some of its chemical components had antioxidant activity.

SUMMARY

Limited research has been performed on lemon eucalyptus essential oil. However, some research suggests it has antioxidant and antifungal properties.

Risks

OLE risks

OLE products can sometimes cause an allergic skin reaction. Shortly after application, look out for symptoms like:

- red rash
- itching

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PMD risks

Products that contain synthetic PMD may have a lower risk of a skin reaction. If you're concerned about having a skin reaction, consider using a synthetic PMD product instead.

Additionally, OLE or PMD products shouldn't be used on children under 3 years old.

Lemon eucalyptus essential oil risks

Like other essential oils, lemon eucalyptus essential oil has the potential to cause skin irritation when used topically. If this occurs, stop using it.

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How to use lemon eucalyptus to repel mosquitoes

OLE and synthetic PMD are available in many commercial insect repellents. Examples of companies that sell products with OLE or synthetic PMD include Cutter, Off!, and Repel.

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sometimes be found as a lotion or cream.

The EPA has a helpful tool to help you search for an insect repellent that's right for you. It gives details on specific products, their active ingredients, and their protection time.

Tips on using OLE products

- Be sure to follow the manufacturer's specific instructions on the product label.
- Make sure to reapply as directed on the product label. Different products can have different protection times.
- Only apply the repellent to exposed skin. Don't apply it under clothing.
- If you're using a spray, spray a little bit into your hands and then apply it to your face.
- Avoid applying the repellent near the mouth, eyes, or skin that's irritated or injured.
- If you're also using sunscreen, apply the sunscreen first and the repellent second.
- Wash your hands after applying the repellent to help prevent accidental ingestion.

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Lemon eucalyptus essential oil

The Centers for Disease Control and Prevention (CDC) recommends against using lemon eucalyptus essential oil as a bug repellent. This is because it hasn't been tested for safety and effectiveness as thoroughly as OLE and PMD.

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- Always dilute lemon eucalyptus essential oil in carrier oil before applying it to the skin. Consider using a 3 to 5 percent dilution.
- Test some diluted lemon eucalyptus essential oil on a small patch of skin before using it on larger areas.
- Keep away from your face.
- Diffuse the surroundings with the essential oil in a diffuser.
- Never ingest an essential oil.

The takeaway

OLE is different from lemon eucalyptus essential oil. OLE is an extract of the lemon eucalyptus tree that's been enriched for PMD, its active ingredient. PMD itself can also be made in a lab.

OLE and synthetic PMD are effective insect repellents and can be found in commercial products. They can be used as an alternative to DEET or picaridin. Be sure to carefully follow the instructions on the label while using them.

Lemon eucalyptus essential oil isn't recommended for use as a repellent, as its safety and effectiveness haven't be properly tested. If you do choose to use it, make sure to use safe essential oil practices.

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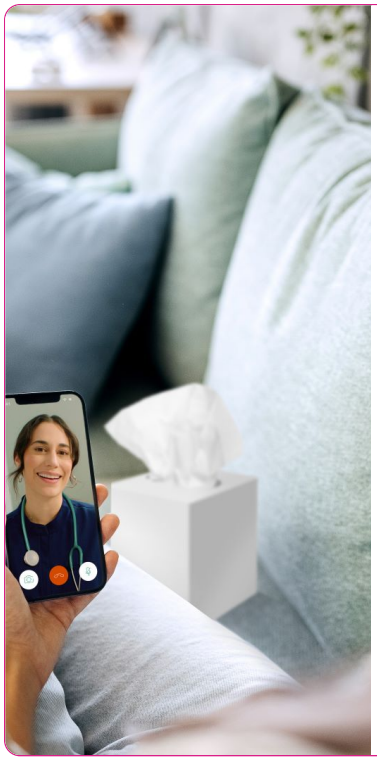

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Medically reviewed by Vincent J. Tavella DVM, MPH — Written by Jandra Sutton on July 29, 2019

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Not everyone is comfortable using synthetic chemicals and pesticides to ward off bugs. Many people are turning to natural, environmentally friendly remedies for repelling insects, and homemade bug sprays are an easy solution. Not only are they typically safe for human use, they're generally effective too.

This article will take a closer look at some of the natural ingredients that may help keep bugs at bay, and how you can use these ingredients to make your own bug spray.

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What natural ingredients help repel bugs?

While the Environmental Protection Agency (EPA) requires most skin-applied insect repellants to be registered for both human safety and effectiveness, the agency has also listed several natural ingredients as minimum risk pesticides.

It's important to note that while these ingredients are safe for human use, the EPA does not evaluate them for effectiveness.

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your home and yard.

Citrus oils

Citronella and citrus oils like limonene are popular and well-known insect repellents. Studies suggest citronella helps repel mosquitoes, and it may also be effective against kissing bugs, fleas, aphids, mites, and flies.

Garlic oil

Research suggests that garlic oil may help with repelling ticks. Plus, the Centers for Disease Control and Prevention (CDC) lists garlic oil as a natural tick repellent for use in yards and gardens.

Thyme essential oil

A 2005 study suggest that thyme essential oil helps repel mosquitoes. However, thyme oil isn't considered safe for use on your skin unless diluted.

Oil of lemon eucalyptus

A 2016 review concluded that oil of lemon eucalyptus is an effective natural mosquito repellent. Plus, according to the CDC, products containing oil of lemon eucalyptus are effective against mosquitoes.

Oil of lemon eucalyptus shouldn't be confused with lemon eucalyptus essential oil which isn't effective at repelling mosquitoes.

Dill essential oil

Looking to repel bugs indoors? One study concluded that dill effectively repels cockroaches. However, the oil should be diluted before using it on your skin.

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If mosquitoes are a major concern, cinnamon oil may be a good option to consider. One study concluded that cinnamon oil helped repel mosquitoes both in a lab setting and outdoors. Another study suggested cinnamon oil may be effective in killing mosquito larvae as well.

However, cinnamon oil can cause skin reactions, so be sure to dilute it before using it on your body, or stick to using it in the yard.

Lavender essential oil

Lavender oil isn't only helpful for relaxation and sleep. It can also be effective at repelling mosquitoes. Plus, lavender is usually considered safe for topical use without diluting it.

Peppermint oil

Studies suggest that peppermint oil works to both kill and repel mosquitoes. Plus, another study concluded that peppermint oil may be effective at keeping spiders away as well.

Safety tips

Many of these ingredients are considered natural and safe for human use. However, it's important to remember that not all essential oils are safe for topical use. If you're planning to use essential oils on your skin, you may need to dilute them with a carrier oil.

Certain essential oils, like citrus oils, can be phototoxic when applied directly to the skin. This means that sun exposure may cause severe burns and even skin cancer.

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Homemade bug spray recipe for your skin

When it comes to making a bug spray recipe that's safe on your skin, make sure that you're choosing essential oils that are safe *and* effective for topical application.

For an easy and natural mosquito repellent for your skin, you'll need the following:

- glass spray bottle
- oil of lemon eucalyptus or lavender essential oil
- witch hazel

Then, follow these steps:

- Mix 1 part oil of lemon eucalyptus or lavender essential oil with 10 parts witch hazel in the bottle. (For each drop of oil, use 10 drops of witch hazel.)
- Shake gently to mix.
- Spray to apply.

Homemade bug spray recipe for your home or yard

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yard. Remember, while many essential oils are safe and effective for repelling insects, that doesn't mean they're safe for topical use.

For a DIY indoor/outdoor bug spray, you'll need the following:

- glass spray bottle
- lavender essential oil
- oil of lemon eucalyptus
- citronella essential oil
- distilled water
- white vinegar

Then follow these steps:

- Mix 10 to 20 drops of each essential oil with 2 ounces distilled water and 2 ounces of white vinegar.
- Shake gently to mix.
- Spray to use.

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Homemade bug spray recipe for plants

While some homemade bug sprays can help keep bugs away from your

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For a DIY recipe that won't harm your plants, try diluting a few drops of thyme essential oil with distilled water. Mix in a glass spray bottle and spritz on your plants.

Other tips to prevent bug bites

No one likes dealing with bug bites. Besides using a bug spray or repellant, there are other steps you can take to help protect yourself.

- Wear light-colored, loose-fitting clothing, especially when you're outdoors.
- Make sure your clothing covers your arms, legs, ankles, and feet.
- To avoid mosquito bites, try to stay indoors at dusk and dawn.
- Use citronella candles when you're outdoors for additional protection.
- Avoid wearing scented lotions and perfumes outside.
- Get rid of standing water in gutters, birdbaths, planters, pots, and wheelbarrows.
- Keep any food or drinks covered.

The bottom line

Although synthetic insect repellents are considered safe for human use, natural alternatives are growing in popularity. While studies suggest that many natural ingredients may be effective in repelling insects, more research is needed.

If you want to make a homemade bug spray, make sure you know about the safety of the ingredients you're using. Even natural ingredients can be unsafe in certain situations.

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SOURCES HISTORY

Our experts continually monitor the health and wellness space, and we update our articles when new information becomes available.

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